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POTOMAC RESEARCH INC ALEXANDRIA VA
POINT AND CONTOUR PLOT USERS' MANUAL (U)

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AUG 78 W N BUSHELL, M J SIMKO

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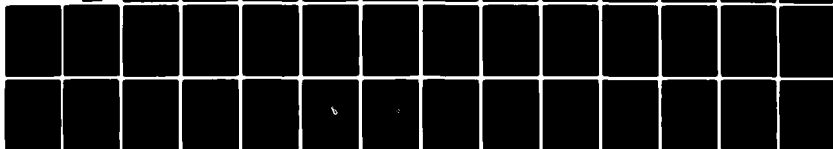
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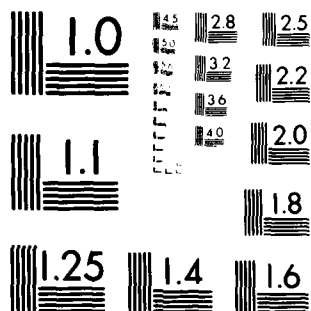
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The program IR*CP-PLOT.DRIVER is an interactive program to produce point of contour plots of results of chemical analyses based on those values for any installation for which data exists. The program is totally interactive and prompts the user at each step. It queries information from the user to determine which data he wishes to view and attempts to assign the appropriate data files. After retrieval, the program passes the data to a contour plotting package to do the plotting. Control is then passed to a third program which can modify some of the data (and hence the plot) and re-plot the data (continued)		

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20. (continued) ↓ on the Tektronix screen or the 4662 plotter or initiate a batch job to do a CalComp plot of the same data. The retrieval data set may be reedited and plotted as many times as desired. ←

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POTOMAC RESEARCH, INCORPORATED
MCLEAN, VIRGINIA 22102

SPECIAL TECHNICAL REPORT IR 78.03U (AUGUST 1978)

POINT AND CONTOUR PLOT
USER'S MANUAL

BY

W.N. BUSHELL
M.J. SIMKO

Prepared For:

Department of the Army
Chemical Systems Laboratory
Developmental Support Division
Scientific & Engineering Applications Branch

Task: 02
Contract Number: DAAK11-77-C-0112
Installation Restoration Data Base Management

APPROVED FOR PUBLIC RELEASE
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This manual is intended for insertion
in Section 9 of the IR DATA MANAGEMENT
USER'S GUIDE. Sections and pages
are numbered accordingly.

THE VIEWS, OPINIONS AND/OR FINDINGS
CONTAINED IN THIS REPORT ARE THOSE
OF THE AUTHOR(S) AND SHOULD NOT BE
CONSTRUED AS AN OFFICIAL STATEMENT
OF THE ARMY, NAVY, AIR FORCE, OR
DECISION, UNLESS SO DESIGNATED BY
OTHER DOCUMENTS

9.1 Interactive Contour and Point Plot Program

9.1.1 ABSTRACT:

The program IR*CP-PLOT.DRIVER is an interactive program to produce point or contour plots of results of chemical analyses based on those values for any installation for which data exists.

The program is totally interactive and prompts the user at each step. It queries information from the user to determine which data he wishes to view and attempts to assign the appropriate data files.

After retrieval, the program passes the data to a contour plotting package to do the plotting. Control is then passed to a third program which can modify some of the data (and hence the plot) and re-plot the data on the Tektronix screen or the 4662 plotter or initiate a batch job to do a CalComp plot of the same data. The retrieval data set may be reedited and plotted as many times as desired.

9.1.2 INTRODUCTION

These instructions are intended for those people who have little or no programming experience but have need of contouring or point plots of chemical test results at various installations. However, a certain degree of knowledge is assumed on the part of the user, such as the ability to log-on the UNIVAC 1108 from a terminal at his installation. (Procedures for this can be found in the IR DATA MANAGEMENT USER'S GUIDE, Sections 1.1 through 1.3 on pages 1-1 through 1-5.)

To take advantage of the option of generating a plot on the Tektronix 4662 plotter, the plotter must be connected to the modem and the Tektronix terminal via the RS-232 interface. In addition, the back panel switches on the plotter must be set to permit operation in this mode. (Procedures for this arrangement can be found in the IR DATA MANAGEMENT USER'S GUIDE in section 1.13.2.)

9.1.3 PROCEDURE

Once the user has initiated a run, he types @XQT IR*CP-
PLOT.DRIVER

then presses [RETURN].

The following will then appear on the screen:

SAMPLING AND ANALYSIS
CONTOUR AND POINT PLOTTING PROGRAM

THE TERMINAL WILL BEEP WHEN INPUT IS NEEDED.

FOR HELP, WHEN ASKED A QUESTION, TYPE A "?".

WHEN THE TERMINAL BEEPS AFTER THE PLOT IS DONE,
PRESS RETURN TO CONTINUE

PRESS RETURN TO CONTINUE

After pressing the return key, the following will appear:

IF YOU ARE USING A TEKTRONIX 4051, PRESS USER DEFINABLE
KEY #19 (MARGIN OFF).

**** PRESS RETURN TO CONTINUE ****

In most cases the user will be using the Tektronix 4051. However, if one is using a different style of terminal, the preceding may be disregarded.

After this, a series of questions will be asked of the user, giving a degree of flexibility to the type of output that may be obtained.

In order to have the user gain confidence in using this program, let's proceed as if we wished to obtain a contour plot of the chemical TP04 at Edgewood Area for all dates. We will look at the study area "J-FIELD", then use the ZOOM technique to examine a portion of the plot, and finally send the plot to the Calcomp plotter. We will also produce the same contour plot for the entire Edgewood Area, selecting groups of features and specific features to be added to the plot.

Before proceeding with the plot, it would be desirable to know how to handle an error made by a user in answering a question asked on the screen.

The two most common types of errors are entering incorrect answers and entering [RETURN] instead of an answer followed by a [RETURN].

For example, one question that will appear on the terminal screen is:

ENTER A 2-CHAR SAMPLE TYPE (E.G., SW, GW).

If the user presses [RETURN] without inputting a test name, the program will still go on asking questions until pressing [RETURN] after

DO YOU WANT THE PLOT ON THE TEK 4662 PLOTTER ?
ANSWER (Y/N)

The following will then appear on the screen:

SIT BACK AND RELAX. WHILE I DIG OUT SOME DATA.
YOU NEED DO NOTHING UNTIL THE PLOT IS FINISHED!
@ASG.A IR*EASAC MERGE.
FACILITY REJECTED 400010000000

At this point one must reexecute the program and start over. This can be done by typing in:

@@X TIO
@XQT IR*CP-PLOT.DRIVER
and press [RETURN].

If the user responds to a question and types in an unacceptable response, such as a wrong code, a wrong name, something that does not exist in the file, etc., a similar response will appear on the screen and the user will need to reexecute the program again by typing:

@@X TIO
@XQT IR*CP-PLOT.DRIVER
and press [RETURN].

The following will appear on the screen after the last return:

ENTER A TITLE FOR THE PLOT(1 LINE,72 CHARS MAX).

Type "DEMO FOR USER'S GUIDE", then press [RETURN].

Next will appear on the screen:

ENTER A 2 CHAR INSTALLATION ID.

Since we are concerned with the Edgewood Area, type "EA" and press [RETURN].

The next question is:

DO YOU WANT A SPECIFIC STUDY AREA FOR THIS INSTALLATION? (Y/N)

NOTE: APPROX. TIME FOR COMPLETE BASE PLOT = 90 MINUTES

>Y

We desire to see the "J-FIELD" area so we answer this question by typing a "Y" and press [RETURN].

We are then presented with this menu:

NOTE: APPROXIMATE TIME FOR COMPLETE BASE PLOT = 90 MINUTES

STUDY AREA CODES AND DESCRIPTIONS

CANL - CANAL CREEK AREA
KING - KINGS CREEK AREA
OFLD - O-FIELD AREA
JFLD - J-FIELD AREA
CARL - CARROLL ISLAND
GRAC - GRACES QUARTERS AREA
NONE - NO STUDY AREA, ENTIRE MAP DESIRED

INPUT THE CODE FOR THE STUDY AREA DESIRED
>JFLD

From the menu we see the code for the "J-FIELD" study area is "JFLD", so we type this and press [RETURN].

Since we have selected a study area, all features are automatically included and the query about features is bypassed. This will be demonstrated later.

We then see:

ENTER A 2-CHAR SAMPLE TYPE (E.G., SN, GW).

Let's assume we did not know the two-character code for ground water. We would type "?" and hit [RETURN]. The following would appear on the screen:

SAMPLE FILE TYPES (2 CHAR)

AT	--	ANIMAL TISSUE
CO	--	CONCRETE
DT	--	DETRITUS
GW	--	GROUND WATER
PT	--	PLANT TISSUE
QR	--	QUALITY CONTROL
SE	--	SEDIMENT
SO	--	SOIL
SS	--	STAINLESS STEEL
SW	--	SURFACE WATER
TI	--	TILE
WO	--	WOOD (NOT JIM)
WT	--	SURFACE WIPING (RADIOLOGICAL SAMPLING)

NOTE - DATA AND FILES MAY NOT CURRENTLY EXIST FOR ALL POSSIBLE ENTRIES

** PRESS RETURN TO CONTINUE **

Looking at the menu, one can easily see that the two-character code for ground water is GW. Press [RETURN]. This will take us back to the original question which is now appearing on the screen:

ENTER A 2-CHAR SAMPLE TYPE (E.G., SW, GW).

Type in "GW" and press [RETURN]. The following will appear on the screen:

ENTER A 4-CHAR SITE TYPE FOR THE SAMPLING
(E.G., WELL, BORE).

Since we are interested in the WELL site type, type "WELL" and press [RETURN].

The following will appear on the screen:

ENTER THE CHEMICAL TEST NAME (6 CHARS MAX).

ENTER "ALL" FOR POINT PLOT OF THE LOCATIONS OF THE
SPECIFIED SITE TYPE

Type in "TP04" and press [RETURN].

Next will appear on the screen:

ENTER PP FOR POINT PLOT, CP FOR CONTOUR PLOT.

Since we want a contour plot we type "CP" and press [RETURN].

We will then see:

USE DEFAULT AUTO CONTOUR LEVELS ? (Y/N)

Press "Y" for yes (this question will appear again and be explained at that time).

Press [RETURN].

The following will appear on the screen:

ENTER BEGINNING JULIAN DATE FOR SAMPLE ACCEPTANCE.
IF NONE, ENTER 0.

Since we want all dates in this particular case,
type in "0" and press [RETURN].

Next will appear on the screen:

ENTER FINAL DATE FOR SAMPLE ACCEPTANCE.
IF NONE, ENTER 0.

In our particular case we would type in "0" and
press [RETURN].

The following will appear on the screen:

WHERE MULTIPLE SAMPLES EXIST FOR THE SITE TYPE
DESIRED AND THE TIME PERIOD CHOSEN,

DO YOU WANT THE HIGHEST, LATEST OR MEAN?

NOTE: USE OF THE MEAN VALUES OVER LONG INTERVALS
OF TIME OR DEPTH WILL MASK TRENDS AND
SHOULD BE USED CAUTIOUSLY

(ANSWER H, L OR M)

2H

Let's pause for a moment so that an explanation of the highest, latest, and mean can be given:

HIGHEST:

Since a portion of the same sample type, taken at the same location and date may be sent to various testing laboratories, a difference in testing procedure may result in a slight degree of difference in the value of the measurement. Also samples may have been taken on the same date and at the same location but at different depths. Highest = Highest for that location over ALL dates in question.

LATEST:

This would be the most recent sample taken at a particular location.

MEAN:

This would be the mean (sometimes called "average") of all the samples at a given sampling location that fit the retrieval criteria.

NOTE: Use of the mean over long intervals of time or depth may mask trends in the data or cause other forms of confusion. THE MEAN SHOULD BE USED VERY CAUTIOUSLY!!

Now that the user has a feeling for the terms "highest", "latest", and "mean", let us proceed with our program.

Since we are interested in the highest value, we type "H" and press [RETURN].

The following will appear on the screen:

DO YOU WANT THE PLOT ON THE TEK 4662 PLOTTER ?
ANSWER (Y/N)

For this question one can either type in "N" for no or "Y" for yes. Since we are only interested in output on the CalComp plotter, type in "N" and press [RETURN].

Next will appear on the screen:

**SIT BACK AND RELAX, WHILE I DIG OUT SOME DATA.
YOU NEED DO NOTHING UNTIL THE PLOT IS FINISHED!**

After a few minutes a message similar to this will appear.

INITIAL UNITS ARE FPM

The units may be different, but the format of the message stays the same.

The message reflects the units found on the first acceptable data point in the Sample and Analysis file. Any succeeding data points that are otherwise acceptable must have the same units. If not, they are rejected, and a message and most of the record are printed on the screen. In a badly validated data file there may be many of these. This part is intended to inform the user that there is invalid data and that his plot may not reflect all available data.

It is not uncommon for several minutes to elapse before plotting begins. Therefore, don't worry that you did something wrong if the plotting does not begin immediately. Also stray characters may appear on the screen due to line noise. The plot will not continue unless [CTRL X] is pressed.

The map is then plotted on the screen. When the map is complete, a BEEP will sound and the word "READY" will appear on the top of the screen.

At this point the user can determine if this is the type of output he wishes. If he wishes to make any changes, he should keep them in mind for the following question.

Press [RETURN].

The following will appear on the screen:

DO YOU WANT TO EDIT AND REPLOT THE DATA ? (Y/N)

If the user just wanted to see the output on the screen but wanted no permanent copy, he would type "N", and the program would end with GOODBYE! on the screen. However, we wish a permanent copy, so type "Y" and press [RETURN].

Next will appear on the screen:

DO YOU WANT TO CHANGE THE CONTOUR LEVELS? (Y/N)

Since we would like to see a few more contours, we type "Y" and press [RETURN].

The number of contour lines on the map depends on the values being plotted and the value the user may select for contour intervals. Therefore, to aid the user, the program is designed to determine automatically the number of contour lines to keep the intervals to round increments. However, if the user desires, for example, to have half as many contour lines, he just types in "Y" to the preceding question, and the following will appear on the screen.

CONTOURS CURRENTLY AT 2.500 ;
INPUT NEW CONTOUR LEVEL .

>2.0

The user might then type in "5.0" (which means that the interval between contour lines will be doubled and there will be half the number of contours as previously plotted).

If the user typed in "1.25", instead of "5.0", twice as many contours would be drawn as previously plotted. (Plots of the same chemical test at different contour levels are illustrated in section 9.1.4.)

We only wish to see a few more contours so we type in "2.0".

After pressing [RETURN], the following will appear on the screen:

WHERE DO YOU WANT THE PLOT?

S = SCREEN
P = 4562 PLOTTER
C = CALCOMP

Since we're interested in having the output plotted on the Calcomp, type in "C" and press [RETURN].

Next to appear on the screen is:

INPUT THE FOLLOWING INFORMATION ON 1 LINE:
YOUR NAME, PROJECT ID, YOUR PHONE EXT., YOUR INSTALLATION.

The user would then type, for example:

SIMKO, IR, 3125, EDGEWOOD

This will allow people at the central site to know
where to ship the finished plot. Now press [RETURN].

The following will appear on the screen:

BATCH JOB WILL BE STARTED TO SEND PLOT TO CALCOMP

AFTER TERMINAL BEEPS

** PRESS RETURN TO CONTINUE **
INTERVENING STATEMENTS SKIPPED
FACILITY WARNING 100000000000

A plot tape will be produced for the CalComp plotter.

(The plot is shown as Fig. 7.)

Also, a BEEP will sound. Press [RETURN].

The following will appear on the screen:

DO YOU WANT TO EDIT AND REPLOT THE DATA ? (Y/N)

Since we want to review the plot on the screen and use the ZOOM technique, we answer the question with a "Y" and press [RETURN].

We continue through the same series of questions about contour levels (we don't change them) and where to direct the plot (to the screen). We then are asked the question:

DO YOU WISH TO ZOOM IN ON THE PREVIEW? (Y/N)

>Y

We wish to ZOOM so we answer with a "Y" and press [RETURN]. We are then presented with the following information and question:

**THE FIRST PLOT HAD AN ORIGIN OF -1.0, -1.0
AND A WINDOW OF 52.0, 40.0. AND THE S.W. CORNER
OF THE LABELED FRAME AROUND THE INSTALLATION
WAS AT 11.0, 12.0 (AS MEASURED IN CALCOMP INCHES)
AND EACH TIC MARK = 0.5 CALCOMP INCHES**

**PLEASE ENTER THE NEW ORIGIN (X,Y)
>18.0, 14.5**

Having decided that we want the area as shown in Fig. 8 we count the number of tic marks over and up to our new origin.

Keeping in mind that each tic mark equals 0.5 Calcomp inches and that the origin of the original plot was at 11.0,12.0, we calculate the new origin to be:

$$X = 11.0 + 0.5 \times (14 \text{ tic marks}) = 18.0$$

$$Y = 12.0 + 0.5 \times (5 \text{ tic marks}) = 14.5$$

So we answer the question about origin by typing "18.0,14.5" and press [RETURN].

We then set the following question:

PLEASE ENTER THE WINDOW SIZE (X,Y)

(NOTE: TO PRESERVE ASPECT RATIO, THE RATIO OF X/Y SHOULD BE 1.3/1.0)

>13.0,10.0

We have decided we want to see an area that is 20 tic marks high. Therefore:

$$Y = 0.5 \times (20 \text{ tic marks}) = 10.0$$

Since the ratio must be $X:Y = 1.3:1.0$ to preserve the aspect ratio:

$$X = 1.3 \times Y = 13.0$$

NOTE: Any size may be used, but it will result in distortion of the picture.

We answer the question about size with "13.0,10.0" and press [RETURN].

The plot in Fig. 9 is what was produced on the screen. Note that it is an enlargement of the boxed-in area of Fig. 8.

After the plot is finished, the word "READY" will appear at the top of the screen and the terminal will BEEP. When finished looking at the plot or copying it, press [RETURN].

The following will appear on the screen.

```
DO YOU WANT TO EDIT AND REPLOT THE DATA ? (Y,N)  
> N
```

Since we are finished, we type "N" and press [RETURN].

On the screen will appear:

GOOD BYE !

which signals the user that the program is finished.

The only thing left to do now is sign off the terminal and wait for the plot to be sent to you.

The following covers the method of plotting the entire installation and selecting features to be plotted.

All details about this run are the same as before with the following exception.

When the question:

DO YOU WANT A SPECIFIC STUDY AREA FOR THIS INSTALLATION? (Y/N)

NOTE: APPROX. TIME FOR COMPLETE BASE PLOT = 90 MINUTES

>N

is asked, we answer with an "N" and press [RETURN]. We are then presented with the following question:

DO YOU WANT ADDITIONAL FEATURES PLOTTED FOR

THIS INSTALLATION? (Y/N)

>Y

We answer the question with a "Y" and press [RETURN]. We then see this question:

DO YOU WANT TO SELECT GENERAL GROUPS OF FEATURES? (Y/N)

>Y

Since we want some general groups of features plotted, we answer this question with a "Y" and press [RETURN].

We are presented with this menu:

CLASSES AND DESCRIPTIONS OF GENERAL FEATURES THAT MAY BE DISPLAYED. ANY NUMBER OF FEATURES OR ALL TYPES MAY BE CHOSEN.

NOTE: PROGRAM WILL CONTINUE ASKING FOR TYPES UNTIL ALL OR DONE IS ENTERED

CODE - DISCRIPTION

SURW - ALL SURFACE WATER (RIVERS, LAKES, STREAMS, ETC.)
WASN - ALL WASTE WATER
ROAD - ALL ROADS
BLDG - ALL BUILDINGS AND BUILDING GROUPS
FELD - ALL FIELDS
ALL - ALL ABOVE FEATURES PLUS ALL OTHER FEATURES AVAILABLE
DONE - NO MORE FEATURES TO BE SELECTED

ENTER CODE:
>ROAD
ENTER CODE:
>BLDG
ENTER CODE:
>DONE .

We may select as many of the classes as we wish, or just one.

NOTE: All includes all five categories and all other digitized features on the map.

We are presented with this menu:

CLASSES AND DESCRIPTIONS OF GENERAL FEATURES THAT MAY BE DISPLAYED. ANY NUMBER OF FEATURES OR ALL TYPES MAY BE CHOSEN.

NOTE: PROGRAM WILL CONTINUE ASKING FOR TYPES UNTIL ALL OR DONE IS ENTERED

CODE - DISCRIPTION

SURF - ALL SURFACE WATER (RIVERS, LAKES, STREAMS, ETC.)
WASN - ALL WASTE WATER
ROAD - ALL ROADS
BLDG - ALL BUILDINGS AND BUILDING GROUPS
FELD - ALL FIELDS
ALL - ALL ABOVE FEATURES PLUS ALL OTHER FEATURES AVAILABLE
DONE - NO MORE FEATURES TO BE SELECTED

ENTER CODE:
>ROAD
ENTER CODE:
>BLDG
ENTER CODE:
>DONE .

We may select as many of the classes as we wish, or just one.

NOTE: All includes all five categories and all other digitized features on the map.

Assume that we want ROADS and BUILDINGS plotted. In response to the first "ENTER CODE", we type "ROAD" and press [RETURN]. The program checks the input code against the possible codes and tells us if it is not a valid one. The program then responds again with "ENTER CODE". We type "BLDG" and press [RETURN]. The validity check is made again, and the program responds with "ENTER CODE" again. Since we have selected all the groups of features we want we type "DONE" and press [RETURN].

The program will then ask:

DO YOU WANT TO SELECT SPECIFIC FEATURES? (Y/N)

>Y

Since we are also interested in seeing some specific features, we answer with a "Y" and press [RETURN]. The program then tells us:

THERE ARE 13 SPECIAL FEATURES, EXCLUSIVE OF THE GENERAL GROUPS SELECTED AND THEY WILL OCCUPY 1 SCREEN PAGES.

DO YOU WANT THEM PRINTED? (Y/N)

>Y

NOTE: General groups which were selected are not included in the list, so in our case all ROADS and BUILDINGS have been removed.

Since we don't know the codes for the features we want, we answer with a "Y" and press [RETURN].

The following menu is printed. (If there were more than 25 features, they would be printed 25 per page with a note at the bottom of each page to "PRESS RETURN TO CONTINUE".

CODE - DESCRIPTION

SURWWRIGHTBR - WRIGHT CREEK, EAST BRANCH
SURWWRIGHTWBR - WRIGHT CREEK, WEST BRANCH
SURWCOOPERSWBR - COOPERS CREEK, WEST BRANCH
SURWCOOPERSSBR - COOPERS CREEK, SOUTH BRANCH
SURWSWADCREK - SWADERICK CREEK
SURWWATSONCREK - WATSON CREEK
SURWCANALEBR - CANAL CREEK, EAST BRANCH
SURWCANALMIDBR - CANAL CREEK, MIDDLE BRANCH
SURWCANALWBR - CANAL CREEK, WEST BRANCH
SURWPHOSSYPOND - PHOSSY POND
SURWREARDONINL - REARDON INLET
SURWMONKSCREK - MONKS CREEK
FELDOLD - OLD O-FIELD
DONE - NO MORE SPECIAL FEATURES
ENTER CODE:

SURWWATSONCREK

ENTER CODE:

SURWCOOPERSWBR

INVALID CODE - TRY AGAIN
ENTER CODE:

SURWCOOPERSWBR

ENTER CODE:

DONE

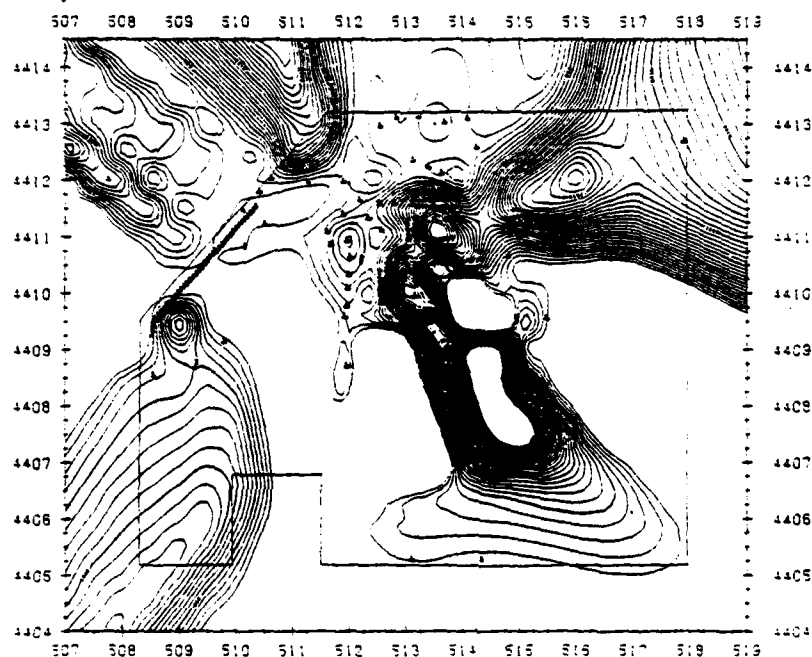
We have decided we would like to see "WATSON CREEK" and "COOPER'S CREEK - WEST BRANCH". We type "SURWWATSONCREK" and press [RETURN] in response to the first "ENTER CODE". It is checked against the list for validity, and the message "ENTER CODE" is displayed. We mistakenly type "SORWCOOPERSWBR" and press [RETURN]. The program informs us of the mistake and asks us "ENTER CODE". We type "SURWCOOPERSWBR" and it is accepted. It then asks "ENTER CODE" again. Since we are done, we type "DONE" and press [RETURN].

The rest of the execution is the same as before, and the resultant plot is shown in Fig. 10.

9.1.4 SAMPLE PLOTS:

The following plots show how the output would appear using different contouring levels of the same installation, chemical substance, beginning and ending data, sample type, and site type.

- Figure 1. Contour level at 125
- Figure 2. Contour level at 250
- Figure 3. Contour level at 500
- Figure 4. Contour level at 1000
- Figure 5. Contour level at 2000
- Figure 6. Point plot
- Figure 7. Study area plot sent to Calcomp plotter
- Figure 8. Study area showing box to be ZOOMed-in on
- Figure 9. Full screen plot of desired area from Fig. 8
- Figure 10. Full installation plot of same chemical



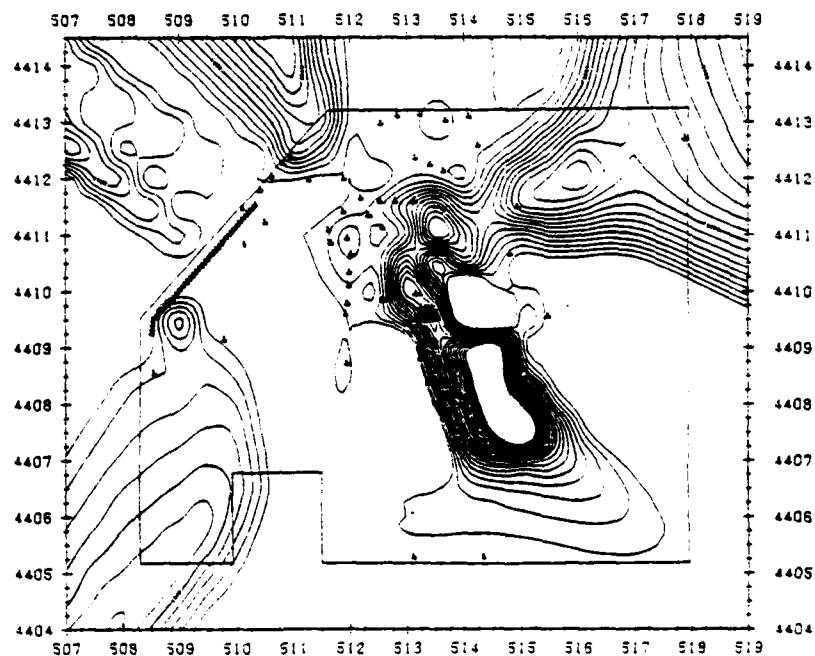
SAMPLE AND ANALYSIS - CHEMICAL POINT-CONTOUR PLOT

THIS IS A TEST EXAMPLE

INSTALLATION : ROCKY MOUNTAIN ARSENAL

RUN DATE : 31 MAY 79
 TEST NAME : 534 HIGHEST
 SAMPLE TYPE : 2H
 SITE TYPE : WELL
 STARTING DATE : 77001
 ENDING DATE : 79120
 COORDINATES-UTM (KILOMETERS)
 CONTOURS AT 125 JGL

Figure 1. Contour level at 125



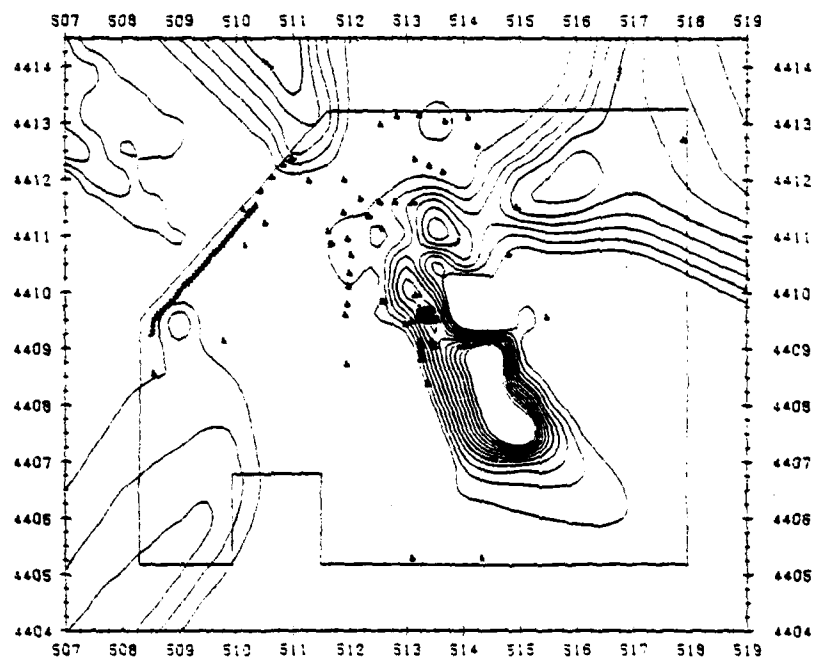
SAMPLE AND ANALYSIS - CHEMICAL POINT-CONTOUR PLOT

THIS IS A TEST EXAMPLE

INSTALLATION : ROCKY MOUNTAIN ARSENAL

RUN DATE : 31 MAY 78
 TEST NAME : 504 HIGHEST
 SAMPLE TYPE : GW
 SITE TYPE : WELL
 STARTING DATE : 7700:
 ENDING DATE : 78120
 COORDINATES-UTM : KILOMETERS:
 CONTOURS AT 250 UGL

Figure 2. Contour level at 250



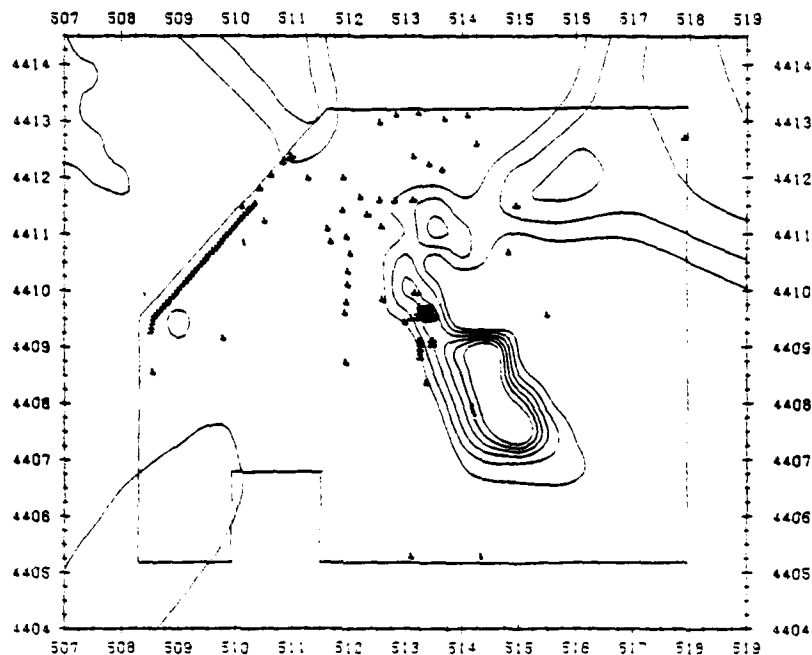
SAMPLE AND ANALYSIS - CHEMICAL POINT-CONTOUR PLST

THIS IS A TEST EXAMPLE

INSTALLATION : ROCKY MOUNTAIN ARSENAL

RUN DATE : 31 MAY 78
 TEST NAME : 534 HIGHEST
 SAMPLE TYPE : CW
 SITE TYPE : WELL
 STARTING DATE : 77001
 ENDING DATE : 78120
 COORDINATES-UTM : KILOMETERS
 CONTOURS AT 500 JGL

Figure 3. Contour level at 500

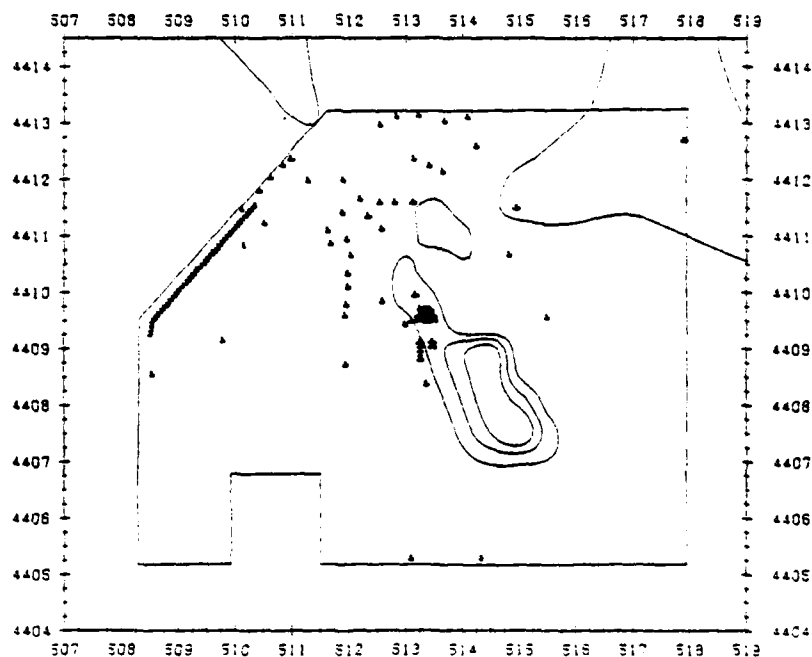


SAMPLE AND ANALYSIS - CHEMICAL POINT-CONTOUR PLOT
THIS IS A TEST EXAMPLE

INSTALLATION : ROCKY MOUNTAIN ARSENAL

RUN DATE : 31 MAY 78
TEST NAME : 504 HIGHEST
SAMPLE TYPE : GW
SITE TYPE : WELL
STARTING DATE : 77001
ENDING DATE : 78120
COORDINATES-UTM (KILOMETERS)
CONTOURS AT 1000 UGL

Figure 4. Contour level at 1000

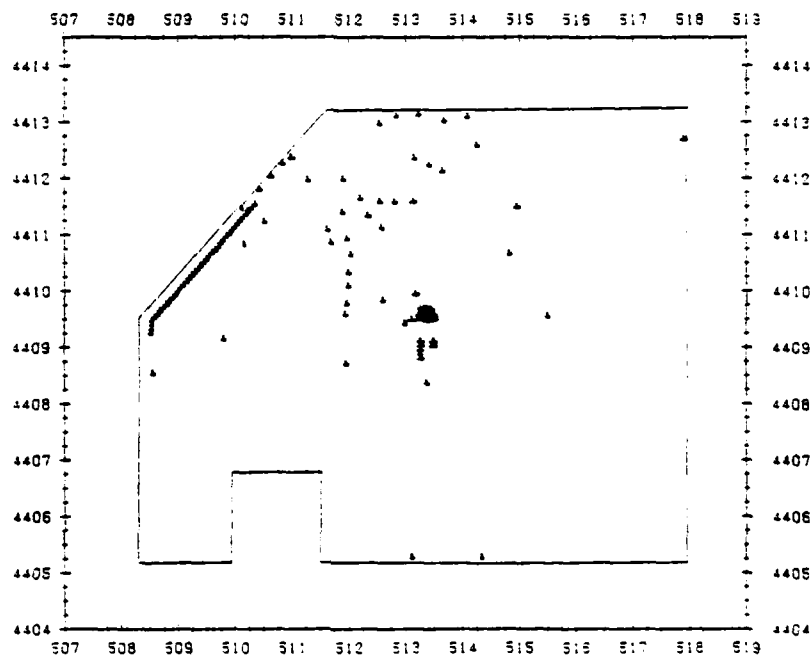


SAMPLE AND ANALYSIS - CHEMICAL POINT-CONTOUR PLOT
THIS IS A TEST EXAMPLE

INSTALLATION : ROCKY MOUNTAIN ARSENAL

RUN DATE : 31 MAY 78
TEST NAME : 504 HIGHEST
SAMPLE TYPE : GW
SITE TYPE : WELL
STARTING DATE : 77001
ENDING DATE : 78120
COORDINATES-UTM : KILOMETERS
CONTOURS AT : 2000 UGL

Figure 5. Contour level at 2000

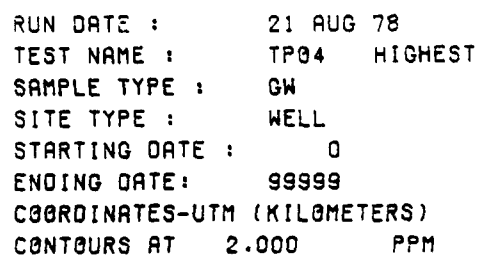


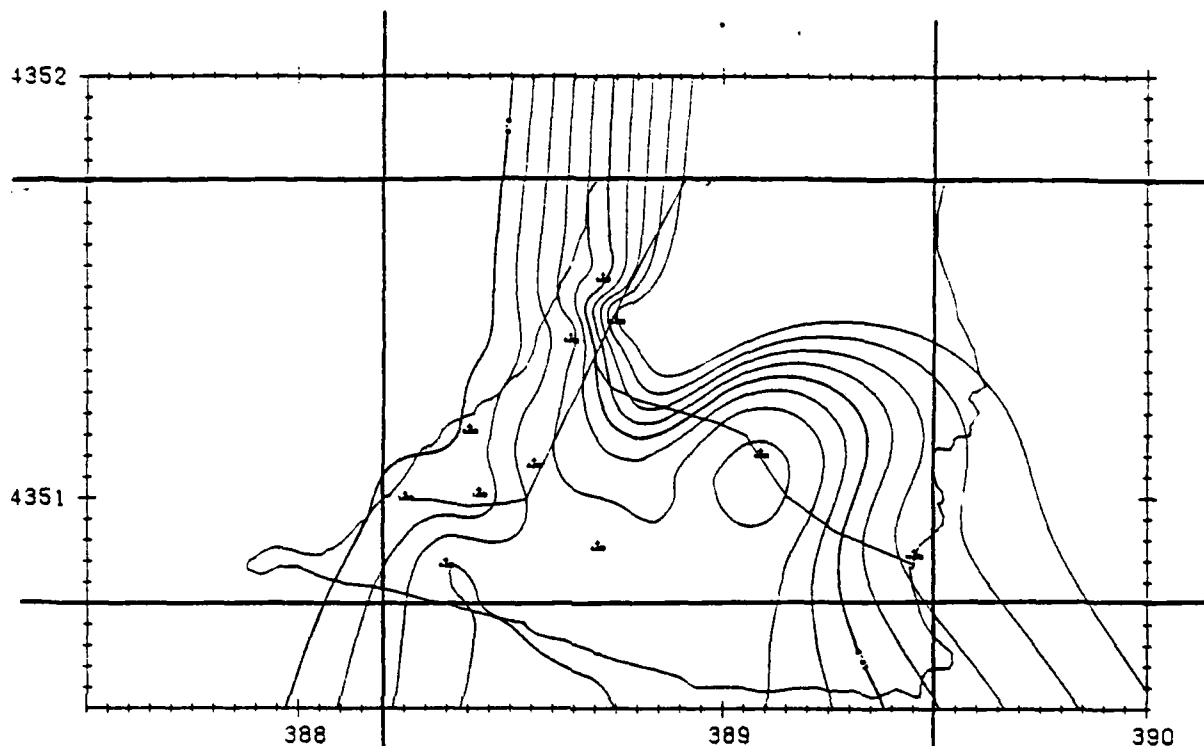
SAMPLE AND ANALYSIS - CHEMICAL POINT-CONTOUR PLOT
THIS IS A TEST EXAMPLE

INSTALLATION : ROCKY MOUNTAIN ARSENAL

RUN DATE : 01 JUN 79
TEST NAME : 504 HIGHEST
SAMPLE TYPE : GW
SITE TYPE : WELL
STARTING DATE : 77001
ENDING DATE : 78120
COORDINATES-UTM (KILOMETERS):
CONTOURS AT : 10000 JGL

Figure 6. Point Plot





SAMPLE AND ANALYSIS - CHEMICAL POINT-CONTOUR PLOT
DEMO FOR USER'S GUIDE

INSTALLATION : EDGEWOOD AREA

STUDY AREA: J-FIELD AREA

RUN DATE : 21 AUG 78
TEST NAME : TP04 HIGHEST
SAMPLE TYPE : GW
SITE TYPE : WELL
STARTING DATE : 0
ENDING DATE: 99999
COORDINATES-UTM (KILOMETERS)
CONTOURS AT 2.000 PPM

Figure 8. Study area showing box to be ZOOMed-in on

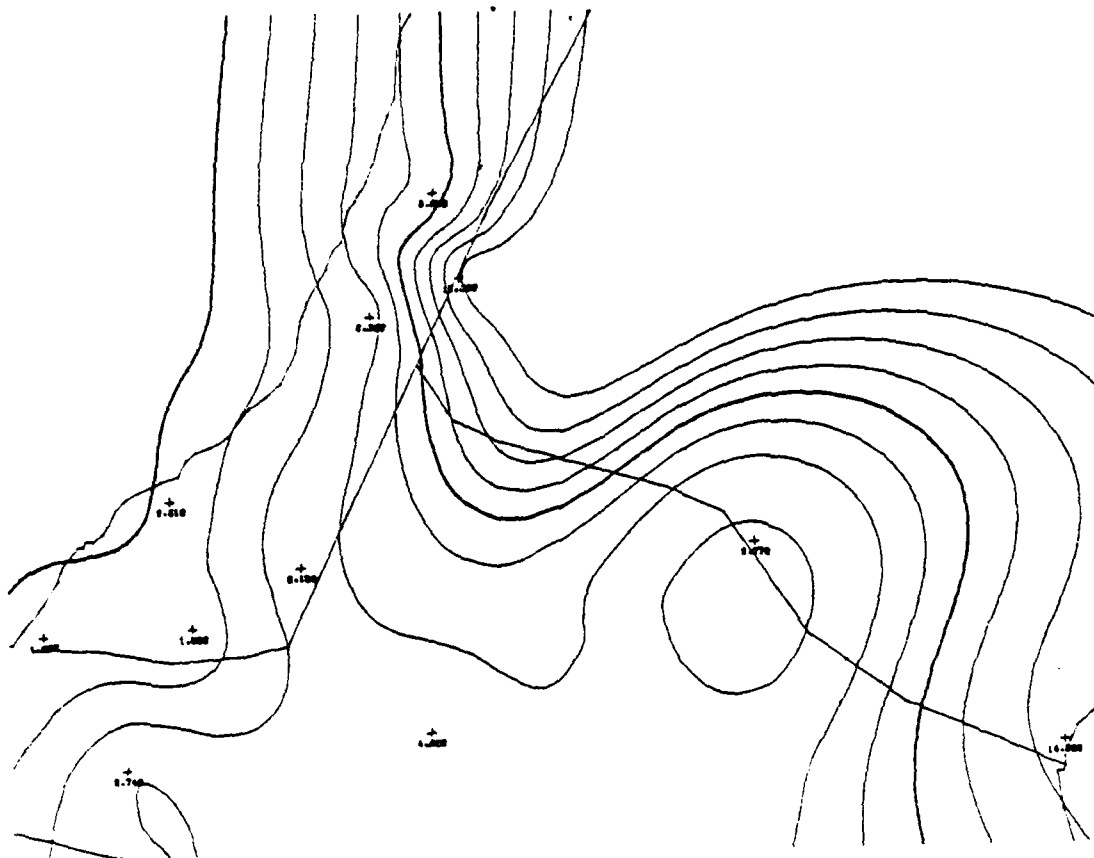
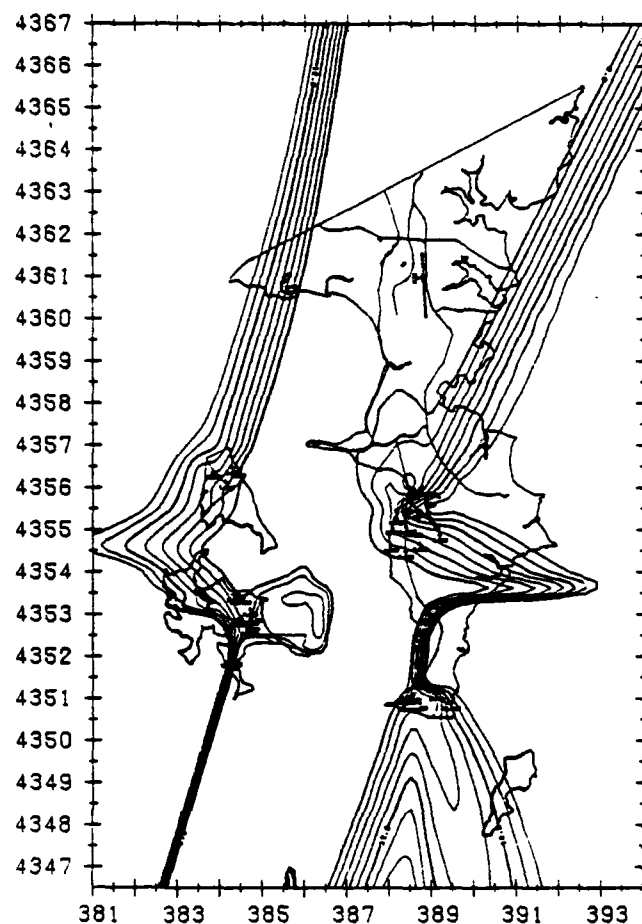


Figure 9. Full screen plot of desired area from Fig. 8

100 DEMO #2 FOR USERS GUIDE

SCALE FACTOR - X 1000.00 Y 1000.00 METERS



SAMPLE AND ANALYSIS - CHEMICAL POINT-CONTOUR PLOT
DEMO #2 FOR USERS GUIDE

INSTALLATION : EDGEWOOD AREA

RUN DATE : 21 AUG 78
TEST NAME : TP04 HIGHEST
SAMPLE TYPE : GW
SITE TYPE : WELL
STARTING DATE : 0
ENDING DATE : 99999
COORDINATES-UTM (KILOMETERS)
CONTOURS AT 2.500 PPM

Figure 10. Full installation plot of same chemical